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GROWTH AND DECLINE OF VEGETATION ON MINE DUMPS

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P.O. BOX 2

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15. Abstract		

1. INTRODUCTION

This report has been prepared as a "Type 1 report" in accordance with section 3, paragraph C of the "Provisions for Participation in the NASA Earth Resources Technology Satellite-A (ERTS-A) Project". As such it is a record of progress made on ERTS investigation SR-577.

This report, as the first type 1 report, should have been submitted during October 1972, i.e. three months after the ERTS-1 launch date. However, no relevant imagery from ERTS-1 was received until November 1972 (see "Revision of Data Analysis Plan" previously submitted). This accounts for the delay in preparation of this report.

Furthermore, the first "Type 2 Report" is due during January 1973, i.e. in a months time. As this will be a comprehensive record of project progress, this present document will report briefly and in broad outline only.

2. OBJECTIVES OF PROJECT

- a) To determine whether ERTS imagery can be used to distinguish mine dumps with vegetative cover from mine dumps without vegetative cover at 3 monthly intervals throughout the year.
- b) To ascertain whether the percentage of mine dump area that is covered by vegetation can be determined at 3 monthly intervals throughout the year.

3. SUMMARY OF ACCOMPLISHMENTS DURING REPORTING PERIOD

Additive colour prints have been produced of an area including mine dumps under various degrees of vegetative cover. An ex-

ample of such a print was enclosed with the "Revision of Data Analysis Plan". On that particular print⁺, two adjacent mine dumps, one relatively unvegetated and the other heavily vegetated, can clearly be mutually distinguished without the necessity of elaborate analysis. At this early stage, therefore, it may be predicted that at least some degree of success will be obtained as far as the monitoring of the vegetative cover of the mine dumps is concerned.

4. SUMMARY OF ACCOMPLISHMENTS PLANNED FOR NEXT REPORTING PERIOD

More detailed interpretative work is now in progress in order to ascertain:

- (i) Whether mine dumps with less well-defined differential vegetative cover can be distinguished from one another.
- (ii) Whether a seasonal trend is evident.
- (iii) The extent to which quantification of vegetative cover is possible.

In addition the additive printing techniques referred to in 3 above are being refined in order to improve information extraction from the ERTS-1 imagery. Further refinements will be discussed in subsequent reports.

5. DESCRIPTION OF MAJOR PROBLEMS ENCOUNTERED

None

6. DISCUSSION OF SIGNIFICANT RESULTS

None

⁺ Prepared by printing bands 4 5 and 7 of ERTS image number 1050-07355 in blue, green and red respectively.

7. CHANGES IN OPERATING PROCEDURES

No changes except as described in the "Revision of Data Analysis Plan" which was submitted in November 1972.

8. LIST OF PUBLISHED ARTICLES AND/OR PAPERS, REPORTS ETC.,
RELEASED DURING REPORTING PERIOD

None published. Two internal reports were prepared, namely:

(i) Tew J.

A Study of the Establishment of Vegetation
on Mine Dumps

Internal Report No. 72/11.

(ii) Kreitzer M.H.

Direct Additive Printing Techniques

Internal Report No. 72/25.

The text of the latter report, which describes the technical particulars of the additive printing procedure used by Spectral Africa, was presented by M. Kreitzer at a meeting of potential data users organised by the Principal Investigator on project number SR-9616 on Friday 17th November 1972 at the Council for Scientific and Industrial Research. This talk was illustrated by various ERTS-1 additive prints. Copies of the report are available on request.